

FINAL MEETING SUMMARY
HANFORD ADVISORY BOARD
TANK WASTE COMMITTEE MEETING
August 11, 2005
Richland, WA

Topics in this Meeting Summary

Welcome and Introductions	1
Sellafield Thermal Oxide Reprocessing Plant (Thorp) Incident.....	1
Tank Retrieval.....	4
Bulk Vitrification	5
Tank C-106	8
Waste Treatment Plant.....	9
Fiscal Years (FY) 2005 and 2006 Budgets.....	12
Mass Balance	13
Committee Business.....	14
Handouts	16
Attendees.....	16

<i>This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, and should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.</i>

Welcome and Introductions

Rick Jansons, Tank Waste Committee (TWC) chair, welcomed the committee and introductions were made. The April meeting summary was adopted without any changes.

Sellafield Thermal Oxide Reprocessing Plant (Thorp) Incident

Chris Burrows, British Nuclear Group (BNG), provided an overview of the release of dissolved nuclear fuel into a contained area at Thorp at the Sellafield site in England. Similar to Hanford, the Sellafield site was set up as a nuclear weapons production facility. Sellafield currently handles all the commercial fuel in all of the United Kingdom, most of the rest of Europe, and parts of Japan.

Thorp's purpose is the reprocessing of civil nuclear irradiated oxide fuel to enable uranium and plutonium to be recycled. Thorp is the most advanced nuclear plant in the world, and has processed 6,000 tons of fuel to date.

The dissolved nuclear fuel leak at Thorp was caused by the failure of a nuclear fuel feed pipe. To ensure all fuel going into the plant is accounted for, Thorp has four levels of accountancy. The leak occurred while fuel was "in liquor," at the head end accountancy, where the nuclear fuel feed pipe enters the tank. The leak was detected by a physical inventory of the volume of waste in the tank compared to the amount of waste measured

at the inlet of the feed pipe, which indicated a measurement discrepancy. An in-cell inspection video was used to identify the location of the feed pipe fracture. The pipe cracked and moved slightly, allowing only eighty percent of the liquor mixture to be deposited into the tank cell. It was determined the crack was caused by metal fatigue, resulting from oscillation of the tank. Metal fatigue from tank oscillation was not predicted by initial design calculations.

To provide some context for the unexpected failure of the pipe, Chris discussed BNG's design principles. All in-cell equipment is designed, constructed, and tested to preclude leaks from the plant. However, waste cells are designed with additional built-in equipment to recover any leaked waste material.

This particular failure caused 83 cubic meters (22,000 gallons) of dissolved liquor to spill in the accountancy tank cell. The leak was contained by the secondary steel containment structures. There was no radiological release, no environmental release, no exposure to the workforce or the public, and a repair plan has been submitted to the regulating agency for approval. It is unique that the incident occurred in a suspended tank. The cause of the feed pipe failure was a fundamental lack of follow-up in making a formal design change to account for an aspect of the facility's construction that differed from the original design.

Bill Hamel, Department of Energy – Office of River Protection (DOE-ORP), discussed Hanford's response to the Thorp release event at the Sellafield Site and how it figures into the design and operation of the Waste Treatment Plant (WTP). DOE is engaged in several actions to develop lessons learned from the Thorp incident, including the formation of the Joint ORP/Bechtel National, Inc. team to address lessons learned from the Thorp incident. Initial issues being addressed by this group include:

- fatigue analysis and design
- leak detection capability
- configuration management
- conduct of operations

Another goal of the Joint ORP/BNI team is ensuring design change information will be preserved and transferred to the Operations Contractor. Unlike Thorp, the designs for the WTP do not include any suspended tanks. However, DOE wants to make sure they have adequate stiffness in the design of the structures to withstand a significant seismic event.

Committee Discussion

- *Pam Larsen asked how long it took BNG to realize there was a leak?* Chris said it took roughly four months, between January and April. As the crack occurred, crystallization formed around the pipe, which may have slowed the leak, making it harder to detect right away. The first evidence of the leak happened in August 2004 from measurement and accountancy activities. BNG is also looking at how conduct of operations may have impacted the leak, and what action has resulted from the incident. Chris said there were numicators (leak detection systems), which are

typically very reliable. Therefore, the biggest unanswered question is why the leak was not detected before 22,000 gallons of waste material were spilled?

- *Dirk Dunning asked how the Thorp incident applies to work being done at Hanford? Dirk noted that the 20% leak at Thorp over a three to four month period, means about 15 cycles of operation occurred before the leak was detected. He commented that after 15 cycles through the system, one would expect to have seen a discrepancy of 20%. Chris explained that concerns the leak was not detected earlier is the reason why there is an investigation into the conduct of operations at the site.*
- Dirk expressed concern about relying on digital monitoring and alarm systems rather than on failsafe engineering to ensure facilities are functioning properly.
- *Since the leak was in a heat-affected zone, Shelley Cimon asked how much heat figured into the failure? Chris said heat was not a factor in the failure of the feed pipe, but was instead a direct result of metal fatigue.*
- *Harold Heacock asked whether BNG plans to restore the cell to service, and what the plans are for the rest of the facility? Chris said BNG has submitted a plan to start up work again at the cell, and is awaiting regulator approval. Currently, Thorp is shut down and has been since April 2005. As a result of the incident, BNG is going through an internal review to seriously consider lessons learned. Chris indicated that one of the main things to keep in mind about the incident and internal review is that conduct of operations is tied to facility design.*
- Pam said the only other issue of committee interest regarding the Thorp incident is safety reporting. She was not sure there have been any other incidents of system failures. Chris said problems still exist with individual system operators recognizing and considering potential leaks. He said the mentalities and psyches of many workers promote a belief that the systems are failsafe, and that leak warnings are just malfunctions of the warning systems themselves.
- *Dirk asked what the metal feed pipe and weld rod were made of and whether the failure occurred due to the type of weld used, or perhaps the impacts caused by the metallurgical change of the pipe due to crystallization of the waste material? Chris explained that the failure was not at the weld, but an inch above it, so the failure was in the pipe itself. He emphasized that every weld is x-rayed to ensure its reliability.*
- *Rob Davis asked if the repair to the pipe was done robotically? Chris said the repair had not happened yet, but would be done robotically once the repair plan is approved.*
- Rob commented that the root cause of the failure is inherently tied to the un-reviewed plant design changes during the construction of the plant. Had those design changes been properly reviewed, BNG may have avoided the failure at Thorp. At Hanford, DOE needs to ensure evaluations of design changes are conducted. This requires significant manpower to conduct reviews of design changes. Rob said he does not believe DOE or its contractors are radiographically reviewing every line in the black cells, so he is not sure it is currently appropriate to use this for accountancy purposes. Bill said one of the key components of the Joint ORP/BNI Team is to review design changes. He believes 100% of the black cell wells are radiographically reviewed, but he said he would check the numbers.

- Rob suggested having the WTP contractor consider comparing the manpower employed at Thorp with the manpower planned for at the WTP.
- There was general committee interest in receiving additional information on the review of conduct of operations at Thorp, which likely has more applicability for Hanford. The committee agreed to request more information on Thorp and conduct operations at a future meeting.

Tank Retrieval

Delmar Noyes, DOE-ORP, provided a status report on single-shelled tank (SST) retrieval and an update on new technologies being applied to tank retrieval. He said DOE is getting close to achieving closure of the SSTs. Waste retrieval in tank C-203 has been completed to the limits of technology. Retrieval in tank C-202 was initiated in June and is 72% complete. Continued retrieval is planned for tanks C-201 and C-204. Retrieval was completed in tank S-112 to the limits of technology, using modified sluicing technology, to achieve TPA milestone M-45-03C.

A representative from CHG showed a video of tank retrieval techniques and technologies. CHG uses a cold test facility to test new technologies for tank waste removal. Removal activities in tank S-112 used a high-pressure remote water lance, which was tested at the cold test facility, to dissolve hard salt deposits.

Delmar said DOE and its contractors have encountered technical issues with tank waste removal, but those issues have been worked through as they have come up. DOE is demonstrating new retrieval technologies and making progress with waste retrieval, but the schedules for closing tanks are taking longer than anticipated. DOE and its contractors are rigorously attempting to meet the retrieval goals, and are engaged in constructive meetings with the state to achieve retrieval goals.

Regulator Perspectives

- Suzanne Dahl, Washington State Department of Ecology (Ecology), said Ecology is glad to see retrieval happening, and that challenges are being addressed. She emphasized the need to continue with retrieval. Ecology and DOE have looked at lessons learned to improve field operations, and things have improved in real time. DOE needs to get as much waste out of the tanks as possible, which will require developing and using new technologies. There will be some challenges in retrieval and Ecology is sensitive to the inherent limits of waste in SSTs and double-shell tanks (DSTs).

Committee Discussion

- *Since it is difficult to move waste material from SST to DST, Pam asked whether it would be difficult to move the same material out of the DST to the WTP once it is complete?* Delmar said a reasonably homogeneous feed of waste material could be provided to the WTP. The difficult types of materials being removed from SST are the dry, solid waste. The waste in the DST would not dry out to those levels, which will make it easier to transfer to the WTP.
- *Pam asked whether DOE performs characterizations during retrieval?* Delmar said characterizations are done during the process of retrieving and feeding waste material into DST, to improve the approach and strategies used to feed waste into DST and eventually into the WTP.
- *Dick Smith asked what DOE does about cleaning waste off the stabilizer bands in the tanks?* Delmar said retrieval workers take care during sluicing to work from the top of the tank, down. Anywhere waste is visible, they wash it down. There does not appear to be waste on the stabilizer bands, but there are some rings near the top of some tanks that collect waste, which will be addressed in the retrieval process.
- *Dick asked how debris material is dealt with in the tank waste retrieval process?* Delmar said operators use a mechanical arm to move debris around to get to the waste. Debris materials with a volume inside them are assumed to contain a full volume of waste, so a worst-case scenario is accounted for.
- *Todd asked Delmar to explain the retrieval progress chart on S-112 in the presentation handout. He asked if the chart depicts only data points on operating days?* Delmar and Ryan said the chart depicts just days in operation, since there were several days when tank waste retrieval work was not done. Todd commented that instead of just observing data associated with operating days, it would be interesting to know how long it takes to initiate work and to stop work. He said he would prefer to see a comparison graph, rather than just graph of operating days, to determine what works most effectively for tank waste retrieval.
- Dirk commented that he hears two different philosophical approaches to tank waste retrieval. DOE's goal is to achieve a point where there is 1% residual waste left in the tanks, whereas the regulating agencies' goals are to remove all waste. He said it is important for DOE to recognize the cleanup process that will follow the retrieval work. Delmar said DOE is committed to employing available technologies to get as much waste out of tanks as possible.
- *Dick asked if DOE is going to use new retrieval techniques and technologies on tanks whose waste retrieval activities were deemed complete?* Delmar said DOE is going to evaluate its options and work through the regulatory process to determine whether or not to use new retrieval techniques and technologies on tanks for which waste retrieval activities were supposedly complete.

Bulk Vitrification

John Kristofzski, CHG, provided an update on the demonstration bulk vitrification system. He discussed the tests to date on waste form qualification and system operability. In the process of doing full scale testing to evaluate bulk vitrification, a breach of the sidewall at the thermocouple occurred. The thermocouple may have been the cause of the breach. A review of the breach was conducted to understand how the waste form performed as well as to gage full system performance, which enables the re-design of the system to change the makeup. For instance, the weight of the glass was too heavy for the support structure, so more support runners were added and the walls were strengthened. Another full-scale test was conducted without any problems. The tests are being done at the cold test facility. DOE is engaged in dialogue with Ecology to discuss how the previous test went and how future tests will be conducted. John showed a video of the melt event to the committee.

Regulator Perspectives

- Suzanne Dahl, Ecology, said Ecology is aware of the delay in meeting the original schedules, which is a concern. However, of greater concern is the need to obtain adequate information to complete construction of the bulk vitrification plant. A second treatment capacity needs to be built adjacent to the main facility. Several cost questions remain to be answered. She indicated that the thing that needs to be identified is what the waste form is, and what the quality of the waste form will be? Ecology has said the waste form coming from any supplementary waste treatment method needs to be as good as glass. Ecology is not so concerned about engineering design issues, which have easier, more tangible remedies. Instead, Ecology is more concerned about issues like the metal slag pool that is left at the bottom of the box, the metal ingots that appear in the waste form, and what constituents end up in the waste forms. In the next six to nine months Ecology is looking to DOE to prove they can make a glass form that meets qualifications that is as good as the glass produced by the WTP.

Committee Discussion

- *Gerry Pollet asked what is the cost to date of the bulk vitrification demonstration project versus the budget, and what is the cost at completion?* Delmar said the cost this year is \$38 million for all activities, which covers almost all the work done to date. The estimate at completion is \$200 million. The worst-case scenario is a six-month schedule slip, but DOE is working on reducing this delay.
- Gerry commented that when the committee was first briefed on this project, it was estimated at a significantly lower cost. Delmar said the contract scope was \$62 million and the total project cost was estimated to be \$102 million.
- *Gerry asked if DOE has disclosed the cost increase to the Congress Appropriations Committee?* Delmar said the numbers are not project cost numbers, but instead reflect total lifecycle costs. The demonstration project is not a line item project, so there is no requirement for Congressional notification. He is not sure how much of the \$102 million was construction costs of the facility.

- Gerry commented it could be useful to tell Congress and the public that funding should be used for constructing the WTP, rather than for the bulk vitrification demonstration project. Delmar said the demonstration project is a specific research and development facility. The costs of the project are not just construction and operations costs. Looking at the gross cost shows that the project is a potentially effective solution for waste treatment.
- *Gerry suggested the Board should follow this issue closely, and asked if funding for the demonstration project impacts the overall ORP budget for the year?* Delmar said funding for the project does not take away from other ORP budget commitments.
- Dick Smith said it would be interesting to see a side-by-side comparison of the bulk vitrification plant and the low-level activity line. John said the demonstration project would provide information on construction and design. The deliverable would be a technical, cost comparable report, including lessons learned. The purpose of the demonstration is to collect all the information to make an informed decision on this supplementary treatment.
- *Gerry asked whether DOE has a Tri-Party Agreement (TPA) milestone they are working towards?* Delmar said DOE is in the process of determining if it can meet the TPA deadline, and they have met with Ecology to figure out if the milestones can be met.
- *Dirk commented that what happens with the chemical constituents and metal slag in the waste product form are very important issues. In the privatization proposal for vitrification, there was no standardization of the waste form. He asked how DOE would conduct performance testing on a non-uniform waste treatment process?* Delmar said waste form performance is very important. He was not familiar with the performance criteria Dirk was referring to.
- *Pam commented that Dirk's point is to identify paths forward with waste treatment, and to identify at what point contractors determine an experimental or demonstration project will not work?* Delmar said the demonstration project is a research and development activity to be used to answer scheduling, design, and cost questions.
- Pam commented that she hopes DOE does not force CHG to spend \$60 million to demonstrate they can handle chemical constituents in waste treatment.
- *Dirk asked whether there is a specific set of criteria that the TPA agencies use to decide whether an activity is working? Furthermore, how does DOE plan to create a standard for a non-homogeneous waste form product?* Many of the outstanding questions about operation, costs, design, etc., will be part of a report submitted to Ecology. In terms of testing multi-phase glass, it is generally good to try and stay away from multi-phase glass products, since DOE would have to prove that the host glass is good, the inner glass is good, and that the interface between the two is good. This type of evaluation takes a lot of lab work to prove, and is the reason CHG and ORP are trying to work out an effective oxidizing processes.
- Dirk suggested there may be deciding factors that enable DOE to determine whether a particular job can be done, and if not the project can be stopped so the money can be redirected to the construction of the WTP. Suzanne said Ecology reviews the results

of each test, to ensure the tests are relevant and appropriate. She noted that Ecology has said there are outstanding issues that need to be resolved.

- Rob Davis commented that the question about what point DOE will decide a project is not succeeding gets back to the need to establish sound performance criteria.
- Harold Heacock expressed concern that the product specs for the bulk vitrification plant include air pallet-type moving containers, which have a record of bad performance in commercial use. John said the decision to use those containers was made considering the need to lift and move 100-ton containers.

Tank C-106

Roger Quintero, DOE-ORP, provided a status update on the Tank C-106 Appendix H Exception Request. The National Regulatory Commission (NRC) must review the request. On June 1, 2005, DOE, ORP, and CHG participated in a public meeting held by NRC on Tank C-106. NRC found ORP's responses to its initial comments satisfactory overall. There was some discussion on a few items in particular, and NRC developed some requests for additional information (RAI). ORP made a commitment to address the RAIs and revise their responses on those topics and send them back to NRC. The document will likely not be available until sometime late this year. DOE wants to provide NRC what information they can now, to keep them engaged, and then send them the final revisions when they are finished.

Regulator Perspectives

- Nancy Uziemblo, Ecology, said work on C-106 is a long process. Ecology is currently looking at whether DOE used the limits of technology to retrieve as much waste as possible from the tank. Ecology is also working with NRC to see their comments to DOE's responses. She said the state prefers to wait to see NRC's comments before discussing the topic further.

Committee Discussion

- Dick expressed concern with the alternatives proposed in the Tank C-106 Appendix H. From his reading of the document, he believes the alternatives discussed were impractical to support DOE's position on C-106. He commented that the document indicated DOE is not really looking for plausible alternatives, but instead are looking at options that support their chosen alternative. Roger said DOE has sent responses to comments on Tank C-106 Appendix H to Ecology. Dick asked to have those responses made available to interested committee members, including himself and Dirk.
- *Dirk asked if committee members would have a chance to look at the document of responses DOE submitted to NRC?* Roger said when DOE has the response document ready they will send it to NRC and make it available to the public.

- *Dirk asked what conceptual model was used for Appendix H?* Roger said he was not qualified to present information on the conceptual model, but he could arrange to have experts come talk to the committee if the committee is interested. He said he is not sure the conceptual model exists in any formal document. Dirk asked to have the existing documents sent to him.
- *Dirk asked if the announcement about the NRC public meeting was released through the TPA process?* Delmar said that because the meeting was an NRC meeting, public announcements about the meeting were not subject to the public involvement requirements in the TPA process. Suzanne, Ecology, said Ecology believes DOE is in compliance with the TPA public involvement process requirements. The next time this process is done on another tank, Ecology can make the commitment to ensure the public notice is made more widely available. Dirk commented that the public did not know about the meeting, which is the reason DOE did not receive much public involvement or comment on the issue.
- *Rob asked if there were any way to coincide the visit to Hanford by NRC representatives with the next committee meeting or call?* Roger said he has noted the committee's interest in the subject, and will try and work something out.

Waste Treatment Plant

John Eschenberg, DOE-ORP, provided a status update on the WTP. He indicated DOE is still legally prohibited from discussing Bechtel's estimate at completion (EAC). Going forward, Bechtel will provide a new EAC for the low-activity waste (LAW) facility on September 30, 2005, and an EAC on a high-level waste (HLW) facility and the pre-treatment facility on December 31, 2005. The Army Corps of Engineers has 90 days to review each submission before the EAC goes out for public comment.

John informed the committee that Jim Owendoff, DOE-HQ, was recently appointed as head of the DOE-HQ oversight team, and recently visited the site.

DOE is beginning to evaluate several options for the WTP, including completing the WTP in phases, bringing the LAW facility on line before the HLW facility, and feeding tank waste directly into the HLW facility. DOE will appoint teams to look at various phasing alternatives, focusing specifically on operational sequencing. DOE has an approved strategy to run all the planned facilities simultaneously, but it may make sense to phase the facilities in, so DOE plans to look at running them separately as well. He said he anticipates Ecology will be part of the team-making decisions.

John indicated pre-treatment is arguably the most complex facility, and is the highest risk facility from the technical perspective. LAW represents the lowest risk from the cost and schedule perspective. DOE is trying to evaluate all alternatives for running the facilities, and wants to plan for a number of different contingencies, and are hoping to complete all evaluations by the end of the year.

Regulator Perspectives

- Suzanne Dahl, Ecology, said Governor Gregoire talked with Secretary Bodwin about the WTP and the Governor expressed concern about the slow down of work on the pretreatment facilities and hopes it does not represent a movement away from building the WTP. Suzanne said Ecology wants to avoid a false-start situation with the WTP. Ecology's number one priority in Hanford cleanup is getting the WTP up and operating. Additionally, Ecology is concerned about ceasing waste retrieval from double-shelled tanks. Ecology wants to make sure risk reductions that can be achieved along the way are incorporated into the project. Suzanne said the state believes waste needs to be turned into treated waste forms, and wants HLW in glass form.

Committee Discussion

- *Pam asked who else would be on the DOE-HQ team to evaluate the WTP?* John Eschenberg said the team would be composed of Jim Owendoff, Kurt Juroff, Jim Poppiti, John Malarky, and Norm Sanlin.
- *Rob asked whether the studies being done were directed by Jim Owendoff?* John said Jim is supportive of the studies.
- Rob said DOE should be cautious not to make it sound like they do not have faith in the design of the pre-treatment plant. John said the project has done a lot to minimize risk. He said running the melter systems is not a difficult process, but that the pre-treatment process is complex, involving pipes, air systems, and it is the first facility of its kind. DOE has not operated a plant the size of the WTP before, so it is a formidable challenge. DOE does not have a lack of confidence; however, chemical plants never behave how they are designed to.
- *Dick said pretreatment was originally going to extract technetium from waste before it goes to the proper treatment facility. Currently there are no plans to do that. Are HLW and LAW facilities going to be able to handle technetium properly?* John said the treatment facilities would be able to handle technetium. Three years ago, the decision was made to remove the ability to treat technetium from the pretreatment facility. DOE understands the need to convince the state that the right technologies exist to capture technetium during the treatment process.
- Pam informed the committee that local community elected officials recently met with Jay Manning, Director of Ecology, to discuss issues with the WTP. She indicated he expressed similar concerns as Governor Gregoire about ensuring plans for WTP construction continue to move forward, and are encouraged by the idea to complete the LAW or HAW facilities sooner, to deal with the tank storage problem.
- *Gerry commented that there were 12-20 tanks considered transuranic (TRU) waste, and identified for removal to the Waste Isolation Pilot Plant (WIPP). He asked why those tanks are not eligible to go to the LAW plant for treatment?* Suzanne, Ecology, explained that the TRU tanks are not LAW material, so they cannot be treated at the

LAW facility. Even if the tanks were not considered TRU, they would be HLW instead of LAW.

- Gerry commented that all the waste could not go to Yucca Mountain if that site never opens. The point of pretreatment is to reduce the number of waste canisters. So, ignoring the repository, if the only reason not to send waste to the LAW facility is because it cannot be disposed of, that is not a good reason to not treat waste and get it in glass form for future disposal. There is not a good environmental reason to decide not to process waste for storage at a later date. John said this is an esoteric conversation, and DOE does not have all the answers.
- Gerry suggested DOE should lay the issues out for the public without presupposing the old norm of wanting to reduce the number of canisters. This provides the public with choices, allowing them to choose what makes sense to do with waste. Referring to a presentation to the National Academy of Science (NAS), Suzanne said there are plans to treat all waste regardless of whether it is being sent to a disposal site. She said, we have what we have in terms of waste at Hanford, and we need to consider that we do not make orphan waste. The state is not okay with becoming a geologic repository, but is okay with storing ILAW in the right disposal configuration.
- Bob Parks said what came out of the local elected officials discussion was that the main goal is to see the waste retrieved and stored safely. There is no site in the nation that wants to take waste from other areas, so DOE should do the best thing by disposing of waste at Hanford and close smaller waste sites.
- Rick said he does not see Nevada and Yucca Mountain taking waste from Hanford. He commented that as a community and a state, Washington needs to decide what to do with all waste. He believes the best approach is to get waste in a relatively stable state until final disposition decisions are made. There are people at Hanford now, who have the technical knowledge to inform decision-makers of the possibilities of identifying a good place to store waste for the intermediate period.
- Todd Martin commented that the Board's record of advice is consistent with what committee members have been expressing.
- Jim Curdy suggested waste should be put in a safe form that could be monitored in the long-term. This will ensure stored waste is safe, but also maintain the possibility of using radioactive material in the future. Chris Burrows, BNG, said the Sellafield site has stored 1.3 billion curies of waste. So, it is feasible if that is the disposal method Hanford decides use for waste treatment and storage.
- Dirk commented that the Board has many pieces of advice on treating waste safely for storage until a repository is available. In discussing waste at the WTP, there is recognition about putting waste in glass form; however, several high hazard materials (many of which DOE is trying to control) get burned off as off-gas. For this reason, it is important to understand the decisions being made about waste treatment and disposal and why they are being made the way they are.

Fiscal Years (FY) 2005 and 2006 Budgets

Delmar Noyes, DOE-ORP, provided an update on the fiscal year 2005 (FY 05) budget and fiscal year (FY 06) budget. He provided the current numbers for the FY 05 budget, for which there were no changes. He discussed the numbers in the President's submitted budget for FY 06, the FY 06 House mark-up, and the FY 06 Senate mark-up. Both the House and Senate budget mark-ups provide funding above what the President's budget provides, but those budgets are still less than DOE's submitted target budget.

Delmar discussed the FY 06 list of deferral activities. Some work activities have been moved, and he believes DOE can deal with the budget numbers when they come in. He said DOE has instituted actions to not expend any money on any of the activities on the deferral list.

Regulator Perspective

Suzanne Dahl, Ecology, said one of Ecology's concerns is that they do not believe the President's FY 06 budget provides enough money to realistically complete the work planned for Hanford. Therefore, there is not enough funding to conduct accelerated retrieval activities. She said DOE's target budget did not initially request enough funding. She commented that BNI laying off 1,000 workers is tied to the fact that funding is inadequate. Looking to the future, without adequate funding, Ecology sees the potential for DOE not meeting TPA milestones. Delmar said that the state has shared its concerns at the highest levels within DOE.

Committee Discussion

- *Pam said that DOE increased funding for CHG in 2004 for work activities needing to be done in 2004. What, specifically, was increase for?* Delmar said the only increase was an additional \$5 million for PBS 14, but he is not sure where that increase will be applied.
- *Pam asked what work activities would not happen when funding decreases?* Delmar said the activities on the deferral list would not be completed, since those activities have been identified as lower priority projects.
- *Gerry asked if CHG was notified recently they were in jeopardy of over-spending their budget for 2005?* Delmar said CHG notified DOE they were close to over-spending their budget. He said DOE is working with them to extend their funding.
- *Gerry asked whether CHG worker layoffs are a result of CHG being close to over-spending its budget?* Delmar said layoffs are not a direct result of budget constraints, but instead CHG has stopped paying overtime and some contracts have been stopped for the time being.
- *Gerry expressed concern about the cost of the bulk vitrification demonstration project.* Delmar said the funding for FY 05 work does not change. If budget increases go through Congress, the demonstration project would have to be funded by FY 05 and FY 06 under ORP 14.

- *Gerry asked why an independent review of the bulk vitrification demonstration project contract was not done?* Delmar said the bulk vitrification demonstration is a research and development activity, so an independent review is not required. Maynard Plahuta added that the contract was for a demonstration project and research and development, so the contract scope is different than for a typical project. He said he does not have a major concern with the contract as long as work can be halted if necessary. Delmar said these are good questions about the contracting process and specifics, and DOE is asking those questions of their own contracts.
- Dirk commented he has heard some apparent confusion between statements by Ecology and DOE about the intent of the Tank Closure Environmental Impact Statement (EIS). He said DOE maintains tank closure is limited by the EIS, while Ecology says closure is not limited by the EIS. Delmar said the EIS should provide guidance for decision-makers. Suzanne, Ecology, reiterated that the EIS should educate decision makers and provide closure plan decisions for them. She said she feels like DOE and Ecology are in agreement on the EIS.
- Dirk said he does not see anything in the EIS where DOE would be doing a full tank excision. Several committee members expressed concern about performing a full tank excision, including worker safety and environmental issues. Dirk explained that he feels there is a need to remove an entire tank to see what problems exist with removing a tank for clean closure options and to ensure DOE does not presuppose that removing tanks is not a viable option. This would also provide a better sense of tank removal estimates. Delmar said DOE does not have anything in its estimates to account for removing an entire tank.

Rick said he would bring this discussion to the tank closure EIS issue manager workshop in September.

Mass Balance

Steve Wiegman, DOE-ORP, provided a briefing on the inventory of waste streams associated with the WTP. The idea behind the mass balance is to use mathematical tools to trace the sources of the particular waste streams in the tanks along whatever paths are available for them to go. This enables the waste inventory to be updated as the process moves forward.

Jim Honeyman, CHG, explained that building the tank waste mass balance required bringing all the modeling code and data together to see what the primary results for the system were. The outcomes indicated some inconsistencies in the modeling code, which have been updated, and data updates continue to be added as they are received. Therefore, he explained, the current waste inventory is a snapshot of an on-going estimate. The inventory and mass balance is a tool used to try and understand what we understand about waste sources, tracking waste treatment paths, and to identify things that are not known about treatment paths for waste streams.

The mass balance starts with inventories of waste constituents in SST and DST, and then displays the paths available for treatment and disposal for each waste stream. The mass

balance serves to demonstrate what is understood about waste inventory and what is known about the performance of facilities and future performance of potential facilities. The numbers generated by computers are just estimates, but the estimates change and improve as more data continues to be added.

Regulator Perspective

Suzanne, Ecology, said the information presented seems more comprehensive than information provided at previous meetings. She said Ecology is working with DOE to understand mass balance, in order to understand where waste constituents go. She said this is a good step in the right direction for moving treatment and cleanup forward.

Committee Discussion

- Dick asked how failed melters would be dealt with, since they are so large? Jim said what to do with the melters is still the subject of on-going discussion. Delmar said the baseline plan allows for disposal of the melters in the Integrated Disposal Facility (IDF), but DOE needs to look at the steps to see what that would take. Suzanne added that disposition of the melters would also depend on how a particular melter failed (i.e. whether it was routinely retired, failed due to an accident, etc.).
- *Dirk asked if there is a higher-level version of the mass balance that looks at what amount of waste was generated from the reactors and where the change (delta) went?* Jim said there is a higher-level examination, but the only place where that is currently being done is in the system assessment capability. *Dirk said he has asked for this information before. Is this available?* Steve said he would call Dirk with the information.
- *Todd noted the mass balance flow diagram shows most of the technetium and iodine waste ending up being classified as LAW and HLW, and being put into glass. Is that something that people are comfortable with?* Suzanne, Ecology, said performance assessments of those wastes, in addition to other wastes, kept it at a level below environmental requirements. Delmar indicated what is of real concern is the amount of the waste constituent that ends up in the secondary waste stream. Steve said DOE is assuming 80% of iodine ends up in the secondary waste system.
- Dirk asked why DOE has no confidence in the performance assessment (PA). He said technetium and iodine would be freely mobile in water. If a model estimates technetium and iodine levels are going to be just below allowable limits, this does not reflect reality, so model estimates are not worth anything. Therefore, there is a need to evaluate the model estimates to determine their accuracy. Jim said PA analysis tries to bound these limits.
- Steve suggested the committee have a technical discussion with the modelers and interested committee members, in order to address these issues.

Committee Business

The committee discussed topics for the September Board Meeting.

- There was general committee agreement on the need to draft advice on the bulk vitrification demonstration project. Rob, Gerry, and Rick will work on draft advice.
 - Concepts in the advice should include: At the policy level, are there criteria for when to continue/stop research and development expenditures? If not, they should be developed. When is it appropriate to stop spending the money on this research project and move it to other needs in ORP? Gerry will draft the section of the advice relating to budget issues.
 - The introduction of the advice should follow a presentation on bulk vitrification by the committee (Dirk, Rob, Maynard). A DOE presentation is not necessary, but John Eschenberg could be asked to be on the phone to answer any questions.
 - The committee discussed the fact that CHG is being required to spend a lot of money to determine how to get technetium out of waste, and therefore are trying to make bulk vitrification better than it may need to be, because technetium is being left in the waste streams. Rob said the committee needs to consider issues with the bulk vitrification plant and supplemental treatment in the context of the rest of the DOE complex. Funding for the demonstration project should come from DOE-HQ, since the demonstration is operating on a national stage.
- A second piece of advice for the September board meeting will be on the WTP. The policy concepts in the advice are: express support for building and operating the plant, board and public frustration with not talking to the public and sharing information about the cost and schedule delays, and don't stop forward progress – continue to explore compliant alternative to keep moving forward while ironing out the design issues. The committee will do a presentation on the WTP to help educate the Board about the issues and the need for advice.

Future committee work:

- Look into conduct of operations at Hanford. The committee discussed the issue of construction changes being made in the WTP design and how they will be communicated to the operators and if they will impact the operations of the facility. The committee agreed to have a presentation from Chris Burrows on Thorp at the next TWC meeting and then continue the discussion.

- Comparison of bulk vitrification with other treatment options, including steam reforming (Idaho). The presentation for this topic should be more technical than previous presentation on why bulk vitrification was chosen over other options.
- Presentation from Al Boldt on his review of the National Academy of Science (NAS) report. Pam said DOE's Idaho site has officially chosen steam reforming as their tank waste treatment of choice. She suggested having a presentation to the committee on the evaluation of that technology at Hanford.
- The committee discussed scheduling for the Tank Closure EIS issue manager workshop.
 - Committee members will look at modeling concepts to educate themselves on the tank waste EIS, in order to present what they have learned to inform policy level discussion and potential advice.
 - The committee decided to hold the workshop in lieu of the TWC meeting in September.
- The cumulative analysis will not be available until spring 2006.
- The committee decided no committee call was needed in August.

Handouts

- Thorp Incident, Bill Hamel, DOE-ORP, 8/11/05.
- Waste Retrieval Technologies, Delmar Noyes, DOE-ORP, 8/11/05.
- Supplemental Treatment Project, John Kristofzski, CHG, 8/11/05.
- Status of Tank C-106 Appendix H Exception Request, Roger Quintero, DOE-ORP, 8/11/05.
- [Waste Treatment Plant update], John Eschenberg, DOE-ORP, 8/11/05.
- FY 2005 and 2006 Budget Update, Delmar Noyes, DOE-ORP, and Kevin Ensign, DOE-ORP, 8/11/05.
- Mass Balance, Steve Wiegman, DOE-ORP, and Jim Honeyman, CHG, 8/11/05.

Attendees

HAB Members and Alternates

Shelley Cimon	Pam Larsen	Dick Smith
Jim Curdy	Todd Martin	John Stanfield
Rob Davis	Vince Panesko	Jane Twaddle
Dirk Dunning (by phone)	Bob Parks	Dave Watrous
Harold Heacock	Maynard Plahuta	Gene Van Liew
Rick Jansons	Gerry Pollet	

Others

John Eschenberg, DOE-ORP	Suzanne Dahl, Ecology	Jeff Daniels, Babcock/ORP
Bill Hamel, DOE-ORP	Nancy Uziemblo, Ecology	Chris Burrows, BNG America
Delmar Noyes, DOE-ORP		Sue Kuntz, BNI
Roger Quintero, DOE-ORP		Jim Honeyman, CHG
Steve Wiegman, DOE-ORP		Penny Mabie, EnviroIssues
		Cathy McCague, EnviroIssues
		Jason Mulvihill-Kuntz, EnviroIssues
		Barbara Wise, FH
		Sharon Braswell, Nuvotec/ORP
		John Stang, Seattle Business Monthly
		Annette Cary, TCH
		John Martell, WDOH